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U.S. Plans Big Spending Increase For Military Operations in Space

Program Includes Better Satellites, Gathering of Intelligence and a Cargo Role for the Shuttle

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Special to The New York Times

WASHINGTON, Oct. 16 — After a quarter-century of mostly peaceful exploration of space, the United States has begun a vast expansion of its military operations there.

In the next five years the Reagan Administration plans to increase spending on military operations in space even faster than the rest of the military budget.

Buildup in Space
A New Military Focus
First of three articles.

Better satellites are planned for highly sophisticated communications, intelligence gathering, navigation, weather forecasting and mapping. The space shuttle, having carried its first military payload, will replace rockets as the primary vehicle for lofting military cargoes into orbit.

The Administration has undertaken elaborate new measures to defend satellites and has ordered a ground-based antisatellite system to be ready by 1987. It has also stimulated research to develop a new generation of advanced weapons such as lasers, though officials say they do not plan to station weapons in orbit.

New Space Command Organized

To put this into a framework, President Reagan has enunciated a new space policy with emphasis on military operations, and the Air Force has organized a new Space Command.

The purpose of the surge into military space operations is to enable American forces to fight more effectively in a prolonged conventional or nuclear war around the world against the Soviet Union, according to a variety of Administration officials. Those officials also argue that the United States cannot surrender the high ground of space to the Soviet Union, most of whose space effort, they say, is for military purposes.

The immediate objective is to provide communications and intelligence that are faster, more reliable, and more secure than current systems to enable outnumbered or outgunned United States forces to move faster and strike harder at vulnerable points. Military commanders call this generating "force multipliers."

The Under Secretary of the Air Force, Edward C. Aldridge, said: "There is the need to find how we can better utilize our existing forces. One thing is information, navigation, weather, communications, all those things that contribute to a better allocation of forces."

Mr. Aldridge, a key official in the military space program, asserted, "There is clearly a need to provide better support to military commanders in time of crisis and in wartime."

"That translates to a need to maintain spacecraft that operate in a hostile environment," he said, referring to places where the craft might come under attack.

Today, Defense Department officials say, American military forces rely on more than 40 satellites for long-range communication, a variety of intelligence gathering, navigation, weather forecasts and mapping.

Those operations, according to Mr. Aldridge, will be enlarged as the Administration plans to increase spending for military uses of space more than 10 percent a year after making up for the effects of inflation. Growth in that area would be faster than the 7 percent annual increases in the overall military budget.

A vital element will be the space shuttle.

"The space shuttle will change the way we do business," said Gen. Robert T. Marsh, commander of the Air Force Systems Command. "We will depend upon it for launching virtually all of our national security payloads."

Almost $11 Billion for Shuttle

Robert S. Cooper, director of the Defense Advanced Research Projects Agency, said the Defense Department planned to spend "$10.9 billion for shuttle-related developments, operations and transition costs to accommodate 20 defense shuttle launches" through 1987.

The first shuttle with a purely military cargo, the nature of which officials would not discuss, is scheduled for next fall. After that, 113 of the 311 flights planned through 1994 will carry military payloads, Mr. Cooper said.

Moreover, weapons capable of destroying Soviet satellites are being developed. The Administration plans to spend $20 billion more on communications, mostly in space, to strengthen control of nuclear forces.

To underscore the new military emphasis on space, Mr. Reagan has outlined a policy for space operations. Minutes after the shuttle Columbia touched down on July 4, Mr. Reagan issued a directive, and the first point on the list was "the security of the United States." While reaffirming a commitment to peaceful uses of space, the directive said, "The United States will pursue activities in space in support of its right to self-defense."

Five-Year Strategic Plan

The five-year strategic plan known as Defense Guidance elaborates, saying, "The United States space program will contribute to the deterrence of an attack on the United States or, if deterrence fails, to the prosecution of war by developing, deploying, operating and supporting space systems."

The Air Force, which has the greatest share of responsibilities in space, has organized a Space Command that will gradually centralize control of space operations. The deputy commander, Lieut. Gen. Richard C. Henry, said: "Space is not a mission, it is a place. It is a theater of operations. It is now time that we treat it as a theater of operations."

Even so, Administration officials insist that they have no plans for putting weapons into orbit.

"We are conducting research and planning related to space weaponry," said Richard D. DeLauer, the Under Secretary of Defense for Research and Engineering. "But I emphasize that no commitment has been made to acquire space-based weapons. And we will proceed only if our national security is so threatened."

Defense Department budgets, however, reflect the Administration's priorities. The military space budget in 1982, which was $6.4 billion, for the first time surpassed that of the National Aeronautics and Space Administration, which was $5.5 billion.

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Goal of $14 Billion Budget

For the fiscal year that began Oct. 1, the Administration has asked for $8.5 billion for military space operations, as against the $6.8 billion that Congress approved for NASA, which was about what the Administration requested. By 1988, according to Mr. Aldridge's calculations, the military space budget will be $14 billion, if Congress approves. That does not include increases to make up for inflation.

Despite the differences in the military and civilian space budgets, senior Administration officials deny that they intend to militarize space. George A. Keyworth, science adviser to the President, says, "That's simply not true. The balance remains essentially what it has been — about a 50-50 split between military and nonmilitary."

Moreover, Mr. Aldridge asserts, military use of space is not new. "We've always been there," he said.

An Air Force general recalled that as a young captain he helped to launch a military satellite in 1965. "It's still working," he said.

Military Emphasis Assailed

Nonetheless, criticism has been mounting. The Secretary of Defense in the Carter Administration, Harold Brown, argues, "It is foolish to let the space science and planetary exploration programs wither." Mr. Brown, in a recent article, said, "The contrasts with the proposals for technologically and militarily dubious multibillion-dollar space weapons programs is all the more painful."

Well-informed people disagree over whether the United States is ahead or behind the Soviet Union in military space operations.

Mr. Brown, considered by members of Congress, military officials and military contractors to be the best qualified technician to have been Defense Secretary, said: "By and large, the United States is ahead of the U.S.S.R. in these military support uses for space. In general, the Soviets, by virtue of their geographically central position, have less need to rely on space-based systems."

Mr. Brown noted exceptions, saying the Russians were ahead in satellites that tracked warships. The Soviet Union has put up four such satellites this year alone, according to Defense Daily, an industry newsletter.

Criticism by Research Group

The Center for Defense Information, a research organization here that says it supports a strong military but opposes excessive expenditures, also deplores what it considers to be an arms race in space. The center maintains that the United States has a better space program "because the United States is able to design and build more sophisticated and capable devices than the Soviet Union."

Administration officials, however, contend that the United States may have fallen behind. Mr. Aldridge says that if the United States fails to pursue a rigorous space program, "we face the chilling prospect of confronting an unforgiving adversary who deploys space warfare systems while we try to react from a markedly inferior defense posture."

To buttress that view, senior military officers cite the Russian manhours in sustained orbit leading to a space station, the Soviet development of an orbital bombardment system and Soviet deployment of a rudimentary antisatellite system. The number of Soviet launchings and the work being done on a space shuttle are also cited.

Last year the Soviet Union made 98 launchings as against 16 for the United States. But other officers contend that some American satellites, with their modern electronics, operate for 10 years while some Russian satellites, with their older electronics, burn out in six months.

The Russians, who were first into space with the famous Sputnik globe 25 years ago, have done considerable work on lasers, which are intense beams of light, and beams of atomic particles. But there is disagreement on how far along they are.

Comparisons Are Difficult

Comparing costs of United States military efforts in space with those of the Soviet Union is difficult. Soviet forces operate mostly in the Soviet Union or, in the case of naval forces, relatively close to Soviet borders. Thus they can rely on shorter, internal lines of communication.

In contrast, American forces are dispersed around the world at the end of long and complicated lines of communication. In addition, the national economies and systems of cost accounting are very different.

Gen. James V. Hartinger, head of the Space Command in Colorado Springs, says that in the current year, "they are outspending us by about $3 billion in total space budget," which would amount to total spending of $18 billion. Congressional officials say the Central Intelligence Agency estimates that Soviet space spending is about $20 billion.

On a warm, sunny day in South Korea last spring, Secretary of Defense Caspar W. Weinberger accompanied President Chun Doo Hwan to a demonstration at a firing range where American and South Korean soldiers directed tank, artillery, and aircraft firepower into the side of a mountain.

Behind the heavily guarded bunker from which Mr. Weinberger and Mr. Chun watched, a United States Army sergeant sat with an 80-pound pack. A signal officer explained that if Mr. Weinberger wanted to talk to President Reagan, the National Military Command Center in the Pentagon, or anyone else in Washington, he need only say so.

The sergeant spun the pack around, pulled out an antenna, aimed it in the direction of a satellite, and said it was ready with a scrambler to preserve secrecy. The signal officer added, "That's an old set. The new ones weigh only half as much."

Communications like that underscore the routine military reliance on satellites, particularly for the command and control of the nation's far-flung military forces. "Over 70 percent of our long-haul communications are handled by satellites," General Hartinger said.

Space communication, moreover, has opened new operational possibilities. Radio transmission by satellite from Desert One, the assembly point for the attempt to rescue American hostages in Teheran in 1980, provided instantaneous communication between the field commander in Iran, the mission commander in Egypt, and Washington.

Persian Gulf Scenario

Dispatching the Rapid Deployment Force to the Persian Gulf would depend on satellite communication, which has played a part in exercises called Bright Star in which American forces went to train in Egyptian deserts.

The main Defense Satellite Communications System has four satellites weighing more than 1,000 pounds each and two backups in orbit. That system connects 27 military command centers and carries voice, Teletype, images and computerized data. Portable ground stations can be linked to it.

A new system of 12 satellites is nearly ready for stationary orbit 23,000 miles up. Those satellites, which will have six instead of four channels, have been designed to last 10 years each.

The Navy has a satellite communication system of five 4,000-pound satellites with 23 channels and a lifespan of five years. Ten channels are allocated to the Navy, 12 to the Air Force, and one for the President or the Defense Secretary.

Tracking Soviet Missiles

The United States has also become dependent on satellites for vital intelligence. Thirty seconds after a Soviet intercontinental ballistic missile lifts out of a silo, American satellites sight it. Three satellites 20 feet in diameter and weighing a ton apiece in stationary orbit watch the entire world with their infrared sensors to pick out telltale heat trails.

As the rocket breaks through the cloud cover, the satellites' sensors pick it up and begin transmitting information on its speed and course to computers and display terminals in a com-

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mand center buried under Cheyenne Mountain, Colo. When the missiles rise above the horizon, they are tracked by radar in England, Greenland and Alaska, with reports also flashed by satellite communication.

In addition, two satellites known as Vela are 60,000 miles out in space to detect nuclear detonations through the use of heat sensors. In peacetime they watch for explosions above the surface that might violate international agreements. In wartime they would tell United States commanders where nuclear warheads had struck, information needed to conduct a protracted conflict.

Intelligence on military dispositions comes from photograph satellites that cover the world. An officer in the Pentagon, asked some months ago where Russian forces were in Afghanistan, took his visitor to a wall map.

Two Tanks and a Bridge

"See where this road goes across this river?" he said. "They have two tanks there, one at either end of the bridge, with their barrels pointed away from the bridge and down the road." Asked how he knew when no American had been there for months, the officer just stared back.

The satellites can be maneuvered to photograph factories, construction sites and farms well enough to make pictures of license plates. Much of American intelligence on Russian agriculture comes from satellite photographs of crops.

They also tell something of Russian life. "I am always surprised," says a naval officer who has seen pictures of remote shipyards, "that there are no parking lots around them. All the workers must walk to work."

Those details can be important. An official with a picture of a military base in Nicaragua said confidently that it had been built for Cubans, not Russians. "Cubans play baseball, Russians play soccer," he said. "This base has a baseball field."

Film Dropped by Parachute

Some satellite photographs are transmitted back electronically through a three-satellite data system. When especially clear resolution is needed, film is dropped by parachute and snatched from the air by aircraft.

Listening to conversations with satellites feeds the intelligence service with prized information. Those satellite operations run by the National Security Agency are also closely guarded secrets. But James Bamford, author of "The Puzzle Palace," a book about that agency, estimates that four or five listening posts are in orbit.

They can listen in on long-distance telephone calls, radio and satellite transmissions, and telemetry from Soviet missiles and can locate radar stations. To watch oceans, four American satellites look for Soviet warships by using infrared sensors and listening devices that scan radio transmissions.

Since the day that Joshua fought the battle of Jericho, military commanders have wanted better weather forecasts. Today two satellites circle the earth in 101-minute polar orbits so that each sees the entire globe in 12 hours. Each satellite scans a swath 1,600 miles wide, transmitting pictures and infrared sensory data to ground stations and ships. Because they show areas clear of clouds, weather satellites tell operators of photographic satellites where to position their craft.

Geodetic Surveys Are Useful

Critical to United States intercontinental, submarine-launched and cruise missiles are geodetic surveys done by satellite. They measure the earth's gravitational pull, which affects missile trajectories.

Recently those satellites have gathered map data to be fed into computer memories of cruise missiles. Those flying torpedoes find a target with sensors telling them where it is and where they should go.

In navigation, the Global Positioning System known as Navstar is revolutionary. It has six of 18 planned 1,000-pound satellites in orbit, with the rest to go up by 1988.

When fully operational, Navstar will enable ship captains, airplane pilots and tank commanders to know within 30 feet their exact longitude, latitude and altitude. In motion, they can tell their speed within four inches per second.

Navigation by the Stars

General Henry of the Space Command says that when he was a lieutenant 30 years ago "we navigated by the stars and considered an accurancy of 10 miles to be pretty good." With Navstar the margin for error has been slashed.

"A hundredth-of-a-mile navigation accuracy has profound implications for our strategic posture," General Henry said. "It implies a surgical precision in the application of force anywhere in the world. That is awesome."

He suggested that a runway 5,000 miles away could be blasted with a missile armed with a 1,000-pound bomb. To shoot missiles thousands of miles, he suggested, meant being able to shed a long supply line for heavy artillery.

For nuclear forces, that accuracy means that nuclear missiles launched from submarines will be as accurate as those fired from the ground, a point certain to be emphasized by advocates of deploying missiles at sea.

The Administration's military space program is laid out in the classified five-year Defense Guidance that provides strategic direction for the armed forces.

Space operations "add a new dimension to our military capabilities," says the guidance document, asserting that the United States must be able to defend space operations and "to deny the enemy the use of his space systems that are harmful to our efforts during conflict."

"We must insure that treaties and agreement do not foreclose opportunities to develop these capabilities," the document said. "In particular, it must be recognized that agreements cannot protect our defense interests in space during periods of hostilities."

The guidance document goes on to order "the prototype development of space-based weapons systems so that we will be prepared to deploy fully developed and operationally ready systems should their use prove to be in our national interest."

Protection of Satellites

The directive gives priority to protecting satellites that warn of attacks by Soviet missiles, to pursuing an antisatellite system and to accelerating technical developments that lead to military advantage.

But the Administration insists that weapons are not to be deployed in orbit. Mr. DeLauer, the Under Secretary of Defense, said, "Space policy does not mandate new directions in space weaponry."

Another priority is to enable satellites to survive attack. Mr. Aldridge said that satellites used to be designed to operate in a "benign environment." Now, he said, "We have recognized that our systems must be able to operate in a hostile, wartime situation."

Air Force officers say that because radiation from nuclear detonations in space is a prime threat, United States satellites must be encased in protective materials. To evade attack, American satellites will rely on warning and escape.

The Role of Deception

"We believe that in most situations, the best counter to physical attack is escape and evasion or maneuver," said General Henry. "Small rocket motors make that possible."

Deception has its place. Scientists

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suggest that the secret technology intended to permit Stealth aircraft to evade detection by radar can be applied to satellites.

Reconstituting a damaged satellite network also takes priority. A satellite can be stored by lofting it into space, testing it, then ordering it into a hidden orbit where it drifts silently. If an operating satellite is knocked out, the stored satellite is moved into place and activated.

Satellites can also be stored on the ground near a rocket ready for launching. Air Force officers point out that the Soviet Union had 16 satellites lofted specifically to watch developments in the South Atlantic in the Falkland crisis.

"The Soviets have a production line going," says Brig. Gen. John H. Storrie, the Air Force's chief of space operations. "They shoot satellites off like popcorn."

'Simple and Responsive'

In a recent interview with Defense Week, an industry newsletter, General Storrie said, "What we, the military users, are looking for is something simple and responsive, that we can put up without having to wait months or years."

The big new satellite-defense communications network that is to be put into initial operation in 1987 and full operation in 1990 will be a seven-satellite constellation known as Milstar. Four satellites will be in stationary orbits while three circle in polar orbit. Those satellites and a spare in orbit will have electronic sensors to detect antisatellite weapons and will be able to escape an attack.

Mr. DeLauer says that Milstar "will provide high-capacity, worldwide, jam-resistant communications" around the world except to the South Pole, with transmitters and receivers in ships, submarines, planes, tanks, and command posts. The system will eventually operate on extremely high frequencies that require antennae no bigger than straight pins.

The defense guidance document also instructs the military services to develop reconnaisance satellites to scan the Soviet Union after an initial nuclear exchange, spotting military forces that are being reassembled, thus providing vital information for "waging protracted nuclear war."

Next: Advanced weaponry.